

0096329

**SAF-RC-182**  
**ARRA 100-F Remaining Sites**  
**Remediation – Soil In-Process**  
**FINAL DATA PACKAGE**

**COMPLETE COPY OF DATA PACKAGE TO:**

Kathy Wendt

H4-21

KW 4/12/11  
INITIAL/DATE

**COMMENTS:**

**SDG JP0123 SAF-RC-182**

Rad only

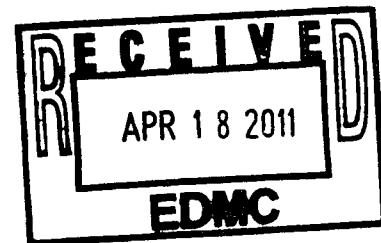
Chem only

Rad & Chem

Complete

Partial

**Sample Location: 100-F-57 Potholes**



Analytical Data Package Prepared For  
**Washington Closure Hanford**

Radiochemical Analysis By  
**TestAmerica**

*2800 G.W. Way, Richland Wa, 99354, (509)-375-3131.*

Assigned Laboratory Code: TARL

*Data Package Contains 22 Pages*

Report No.: 46040

**Results in this report relate only to the sample(s) analyzed.**

SDG No.	Order No.	Client Sample ID (List Order)	Lot-Sa No.	Work Order	Report DB ID	Batch No.
JP0123	RC-182	J1FKV5	J1C170593-1	MFTL61AA	9MFTL610	1076430
		J1FKV6	J1C170593-2	MFTMD1AA	9MFTMD10	1076430
		J1FKV7	J1C170593-3	MFTME1AA	9MFTME10	1076430
		J1FKV8	J1C170593-4	MFTMK1AA	9MFTMK10	1076430

# TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

## Certificate of Analysis

Washington Hanford Closure  
2620 Fermi Avenue  
Richland, WA 99354

TestAmerica Laboratories, Inc.

March 24, 2011

Attention: Joan Kessner

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SAF Number	:	RC-182
Date SDG Closed	:	March 17, 2011
Number of Samples	:	Four (4)
Sample Type	:	Soil
SDG Number	:	JP0123
Data Deliverable	:	7-Day / Summary

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### CASE NARRATIVE

#### I. Introduction

On March 17, 2011 four soil samples were received at TestAmerica for radiochemical analysis. Upon receipt, the samples were assigned the following laboratory ID number to correspond with the Washington Closure Hanford (WCH) specific ID:

<u>WCH ID#</u>	<u>TARL ID#</u>	<u>MATRIX</u>	<u>DATE OF RECEIPT</u>
J1FKV5	MFTL6	SOIL	3/17/11
J1FKV6	MFTMD	SOIL	3/17/11
J1FKV7	MFTME	SOIL	3/17/11
J1FKV8	MFTMK	SOIL	3/17/11

#### II. Sample Receipt

The samples were received in good condition and no anomalies were noted during check-in.

#### III. Analytical Results/Methodology

The analytical results for this report are presented by laboratory sample ID. Each set of data includes sample identification information, analytical results and the appropriate associated statistical errors.

Washington Closure Hanford  
March 24, 2011

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The requested analyses were:

**Chemical Analysis**  
**Hexavalent Chromium by EPA method 7196A**

**IV. Quality Control**

The analytical results for each analysis performed includes a minimum of one laboratory control sample (LCS), one method (reagent) blank, and one duplicate sample analysis. Any exceptions have been noted in the "Comments" section.

QC and sample results are reported in the same units.

**V. Comments**

**Chemical Analysis**

**Hexavalent Chromium by EPA method 7196A**

The LCS, batch blank, samples, sample duplicate (J1FKV5), sample matrix spike (J1FKV5), and matrix spike duplicate (J1FKV5) results are within contractual requirements.

I certify that this Certificate of Analysis is in compliance with the SOW, both technically and for completeness, for other than the conditions detailed above. Release of the data contained in this hard copy data package has been authorized by the Laboratory Manager, or a designee as verified by the following signature.

Reviewed and approved:

*Whitney Sitaris*  
for Sandra Seger  
Project Manager

## Drinking Water Method Cross References

DRINKING WATER ASTM METHOD CROSS REFERENCES		
Referenced Method	Isotope(s)	TestAmerica Richland's SOP No.
EPA 901.1	Cs-134, I-131	RL-GAM-001
EPA 900.0	Alpha & Beta	RL-GPC-001
EPA 00-02	Gross Alpha (Coprecipitation)	RL-GPC-002
EPA 903.0	Total Alpha Radium (Ra-226)	RL-RA-002
EPA 903.1	Ra-226	RL-RA-001
EPA 904.0	Ra-228	RL-RA-001
EPA 905.0	Sr-89/90	RL-GPC-003
ASTM D5174	Uranium	RL-KPA-003
EPA 906.0	Tritium	RL-LSC-005

**Results in this report relate only to the sample(s) analyzed.**

### Uncertainty Estimation

TestAmerica Richland has adopted the internationally accepted approach to estimating uncertainties described in "NIST Technical Note 1297, 1994 Edition". The approach, "Law of Propagation of Errors", involves the identification of all variables in an analytical method which are used to derive a result. These variables are related to the analytical result (R) by some functional relationship,  $R = \text{constants} * f(x,y,z,...)$ . The components (x,y,z) are evaluated to determine their contribution to the overall method uncertainty. The individual component uncertainties ( $u_i$ ) are then combined using a statistical model that provides the most probable overall uncertainty value. All component uncertainties are categorized as type A, evaluated by statistical methods, or type B, evaluated by other means. Uncertainties not included in the components, such as sample homogeneity, are combined with the component uncertainty as the square root of the sum-of-the-squares of the individual uncertainties. The uncertainty associated with the derived result is the combined uncertainty ( $u_c$ ) multiplied by the coverage factor (1,2, or 3).

When three or more sample replicates are used to derive the analytical result, the type A uncertainty is the standard deviation of the mean value ( $S/\sqrt{n}$ ), where S is the standard deviation of the derived results. The type B uncertainties are all other random or non-random components that are not included in the standard deviation.

The derivation of the general "Law of Propagation of Errors" equations and specific example are available on request.

## Report Definitions

Action Lev	An agreed upon activity level used to trigger some action when the final result is greater than or equal to the Action Level. Often the Action Level is related to the Decision Limit.
Batch	The QC preparation batch number that relates laboratory samples to QC samples that were prepared and analyzed together.
Bias	Defined by the equation $(Result/Expected)-1$ as defined by ANSI N13.30.
COC No	Chain of Custody Number assigned by the Client or TestAmerica.
Count Error (#s)	Poisson counting statistics of the gross sample count and background. The uncertainty is absolute and in the same units as the result. For Liquid Scintillation Counting (LSC) the batch blank count is the background.
Total Uncert (#s) <i>u<sub>c</sub>- Combined Uncertainty.</i>	All known uncertainties associated with the preparation and analysis of the sample are propagated to give a measure of the uncertainty associated with the result, <i>u<sub>c</sub></i> the combined uncertainty. The uncertainty is absolute and in the same units as the result.
(#s), Coverage Factor	The coverage factor defines the width of the confidence interval, 1, 2 or 3 standard deviations.
CRDL (RL)	Contractual Required Detection Limit as defined in the Client's Statement Of Work or TestAmerica "default" nominal detection limit. Often referred to the reporting level (RL)
Lc	Decision Level based on instrument background or blank, adjusted by the Efficiency, Chemical Yield, and Volume associated with the sample. The Type I error probability is approximately 5%. $Lc = (1.645 * \text{Sqrt}(2 * (\text{BkgrndCnt/BkgrndCntMin}) / SCntMin)) * (\text{ConvFct} / (\text{Eff} * \text{Yld} * \text{Abn} * \text{Vol}) * \text{IngrFct})$ . For LSC methods the batch blank is used as a measure of the background variability. Lc cannot be calculated when the background count is zero.
Lot-Sample No	The number assigned by the LIMS software to track samples received on the same day for a given client. The sample number is a sequential number assigned to each sample in the Lot.
MDC MDA	Detection Level based on instrument background or blank, adjusted by the Efficiency, Chemical Yield, and Volume with a Type I and II error probability of approximately 5%. $MDC = (4.65 * \text{Sqr}((\text{BkgrndCnt/BkgrndCntMin}) / SCntMin) + 2.71 / SCntMin) * (\text{ConvFct} / (\text{Eff} * \text{Yld} * \text{Abn} * \text{Vol}) * \text{IngrFct})$ . For LSC methods the batch blank is used as a measure of the background variability.
Primary Detector	The instrument identifier associated with the analysis of the sample aliquot.
Ratio U-234/U-238	The U-234 result divided by the U-238 result. The U-234/U-238 ratio for natural uranium in NIST SRM 4321C is 1.038.
Rst/MDC	Ratio of the Result to the MDC. A value greater than 1 may indicate activity above background at a high level of confidence. Caution should be used when applying this factor and it should be used in concert with the qualifiers associated with the result.
Rst/TotUcert	Ratio of the Result to the Total Uncertainty. If the uncertainty has a coverage factor of 2 a value greater than 1 may indicate activity above background at approximately the 95% level of confidence assuming a two-sided confidence interval. Caution should be used when applying this factor and it should be used in concert with the qualifiers associated with the result.
Report DB No	Sample Identifier used by the report system. The number is based upon the first five digits of the Work Order Number.
RER	The equation Replicate Error Ratio = $(S-D)/[\sqrt{(TPUs^2 + TPUd^2)}]$ as defined by ICPT BOA where S is the original sample result, D is the result of the duplicate, TPUs is the total uncertainty of the original sample and TPUd is the total uncertainty of the duplicate sample.
SDG	Sample Delivery Group Number assigned by the Client or assigned by TestAmerica upon sample receipt.
Sum Rpt Alpha Spec Rst(s)	The sum of the reported alpha spec results for tests derived from the same sample excluding duplicate result where the results are in the same units.
Work Order	The LIMS software assign test specific identifier.
Yield	The recovery of the tracer added to the sample such as Pu-242 used to trace a Pu-239/40 method.

**Sample Results Summary**

Date: 24-Mar-11

**TestAmerica TARL**

Ordered by Method, Batch No., Client Sample ID.

**Report No. : 46040****SDG No: JP0123**

Batch	Client Id Work Order	Parameter	Result +/- Uncertainty ( 2s)	Qual	Units	Tracer Yield	MDC or MDA	CRDL	RPD
<b>1076430 7196_CR6</b>									
<b>J1FKV5</b>									
MFTL61AA	HEXCHROME	1.55E-01	+ - 0.0E+00	U	mg/kg	N/A	1.55E-01	1.55E-01	
MFTL61AD	HEXCHROME	1.54E-01	+ - 0.0E+00	U	mg/kg	N/A	1.54E-01	3.50E-01	0.6
<b>J1FKV6</b>									
MFTMD1AA	HEXCHROME	1.54E-01	+ - 0.0E+00	U	mg/kg	N/A	1.54E-01	1.55E-01	
<b>J1FKV7</b>									
MFTME1AA	HEXCHROME	1.54E-01	+ - 0.0E+00	U	mg/kg	N/A	1.54E-01	1.55E-01	
<b>J1FKV8</b>									
MFTMK1AA	HEXCHROME	1.55E-01	+ - 0.0E+00	U	mg/kg	N/A	1.55E-01	1.55E-01	
<b>No. of Results: 5</b>									

TestAmerica	RPD - Relative Percent Difference.
rptSTLRchSaSum mary2 V5.2.12 A2002	U Qual - Analyzed for but not detected above limiting criteria. Limit criteria is less than the Mdc/Mda/Mdl, Total Uncert, CRDL, RDL or not identified by gamma scan software.

**QC Results Summary**  
**TestAmerica TARL**  
 Ordered by Method, Batch No., QC Type,.

Date: 24-Mar-11

Report No. : 46040

SDG No.: JP0123

Batch Work Order	Parameter	Result +- Uncertainty ( 2s)	Qual	Units	Tracer Yield	LCS Recovery	Bias	MDC MDA
<b>7196_CR6</b>								
1076430 MATRIX SPIKE, J1FKV5								
MFTL61AC	HEXCHROME	8.45E+00 +- 0.0E+00		mg/kg	N/A	75%	-0.2	1.54E-01
1076430 LCS,								
MFTXV1AC	HEXCHROME	1.89E+01 +- 0.0E+00		mg/kg	N/A	95%	-0.1	1.55E-01
1076430 BLANK QC,								
MFTXV1AA	HEXCHROME	1.55E-01 +- 0.0E+00	U	mg/kg	N/A			1.55E-01
No. of Results: 3								

TestAmerica	Bias - (Result/Expected)-1 as defined by ANSI N13.30.
rptSTLRchQcSum mary V5.2.12 A2002	U Qual - Analyzed for but not detected above limiting criteria. Limit criteria is less than the Mdc/Mda/Mdl, Total Uncert, CRDL, RDL or not identified by gamma scan software.

**FORM I**  
**SAMPLE RESULTS**

Date: 24-Mar-11

Lab Name: TestAmerica  
 Lot Sample No.: J1C170593-1  
 Client Sample ID: J1FKV5

Parameter	Result	Qual	Count	Total	MDC MDA,	Rpt Unit,	Yield	Rst MDC,	Analysis,	Total Sa	Aliquot	Primary
			Error (2 s)	Uncert(2 s)	Action Lev	Lc	CRD1 RL	Rst Tot Uncert	Prep Date	Size	Size	Detector
Batch: 1076430	7196_CR6				Work Order: MFTL61AA		Report DB ID: 9MFTL610					
HEXCHROME	<b>1.55E-01</b>	U		0.0E+00	1.55E-01	mg/kg	N/A	N/A	3/21/11		2.5	
							1.55E-01	N/A			g	

No. of Results: 1      Comments:

**FORM I**  
**SAMPLE RESULTS**

Date: 24-Mar-11

Lab Name: TestAmerica  
 Lot-Sample No.: J1C170593-2  
 Client Sample ID: J1FKV6

Parameter	Result	Qual	Count	Total	MDC MDA,	Rpt Unit,	Yield	Rst/MDC, CRDI(RL)	Analysis, Prep Date	Total Sa Size	Aliquot Size	Primary Detector
Batch: 1076430	7196_CR6				Work Order: MFTMD1AA		Report DB ID: 9MFTMD10					
HEXCHROME	<b>1.54E-01</b>	U		0.0E+00	1.54E-01	mg/kg	N/A	(1.)	3/21/11	2.5	g	

No. of Results: 1      Comments:

**FORM I**  
**SAMPLE RESULTS**

Date: 24-Mar-11

Lab Name: TestAmerica  
 Lot-Sample No.: J1C170593-3  
 Client Sample ID: J1FKV7

SDG:	JP0123	Collection Date:	3/16/2011 12:45:00 PM
Report No.:	46040	Received Date:	3/17/2011 11:35:00 AM
COC No.:	RC-182-062	Matrix:	SOIL

Ordered by Client Sample ID, Batch No.

Parameter	Result	Count	Total	MDC MDA,	Rpt Unit,	Yield	Rst/MDC,	Analysis,	Total Sa	Aliquot	Primary
	Qual	Error ( 2 s)	Uncert( 2 s)	Action Lev	Lc	CRD RL	RsU/TotUcert	Prep Date	Size	Size	Detector
Batch: 1076430	7196_CR6			Work Order: MFTME1AA			Report DB ID: 9MFTME10				
HEXCHROME	<b>1.54E-01</b>	U	0.0E+00	1.54E-01	mg/kg	N/A	(1.)	3/21/11	2.5	9	

No. of Results: 1      Comments:

**FORM I**  
**SAMPLE RESULTS**

Date: 24-Mar-11

Lab Name: TestAmerica  
 Lot-Sample No.: J1C170593-4  
 Client Sample ID: J1FKV8

SDG: JP0123  
 Report No.: 46040  
 COC No.: RC-182-062

Collection Date: 3/16/2011 12:55:00 PM  
 Received Date: 3/17/2011 11:35:00 AM  
 Matrix: SOIL

Ordered by Client Sample ID, Batch No.											
Parameter	Result	Count	Total	MDC MDA,	Rpt Unit,	Yield	Rst MDC,	Analysis,	Total Sa	Aliquot	Primary
		Qual	Error (2 s)	Action Lev	Lc	CRDL(RL)	Rst/TotUncert	Prep Date	Size	Size	Detector
Batch: 1076430	7196_CR6			Work Order: MFTMK1AA		Report DB ID: 9MFTMK10					
HEXCHROME	<b>1.55E-01</b>	U	0.0E+00	1.55E-01	mg/kg	N/A	1.	3/21/11	2.5	g	
No. of Results:	1	Comments:									

**FORM II**

Date: 24-Mar-11

**DUPPLICATE RESULTS**

**Lab Name:** TestAmerica  
**Lot Sample No.:** J1C170593-1  
**Client Sample ID:** J1FKV5

Parameter	Result, Orig Rst	Count	Total	MDC MDA,	Rpt Unit,	Rst MDC,	Analysis,	Total Sa	Aliquot	Primary
Batch:	Qual	Error ( 2 s)	Uncert( 2 s)	Action Lev	CRDL	Yield	Rst/TotUncrt	Prep Date	Size	Detector
HEXCHROME	1.54E-01	U	0.0E+00	MFTL61AD	Report DB ID: MFTL61ER	Orig Sa DB ID: 9MFTL610				
	1.55E-01	U	RPD 0.6	1.54E-01	mg/kg	N/A	(1.)	3/21/11	2.5	

No. of Results: 1      Comments:

**FORM II**  
**BLANK RESULTS**

Date: 24-Mar-11

Lab Name: TestAmerica  
 Matrix: SOIL

Parameter	Result	Qual	Count	Total	MDC MDA	Rpt Unit,	Rst/MDC,	Analysis,	Total Sa	Aliquot	Primary
			Error ( 2 s)	Uncert( 2 s)	,	CRDL	Yield	Prep Date	Size	Size	Detector
Batch: 1076430	7196_CR6				Work Order: MFTXV1AA						
HEXCHROME	1.55E-01	U	0.0E+00	1.55E-01	Report DB ID: MFTXV1AB	mg/kg	N/A	1.	3/21/11	2.5	
							1.55E-01	N/A		g	

No. of Results: 1      Comments:

Date: 24-Mar-11

**FORM II**  
**LCS RESULTS**

Lab Name: TestAmerica  
Matrix: SOIL

Parameter	Result	Count	Total	Report	Expected	Recovery,	Analysis,	Aliquot	Primary
	Qual	Error (2 s)	Uncert(2 s)	MDC MDA	Unit	Uncert	Bias	Prep Date	Detector
Batch: 1076430	7196_CR6			Work Order: MFTXV1AC					
HEXCHROME	1.89E+01		0.0E+00	1.55E-01	mg/kg	Report DB ID: MFTXV1AS			
No. of Results:	1	Comments:		Rec Limits:	N/A	2.00E+01	95%	3/21/11	2.5
					80	120	-0.1		9

**FORM II****MATRIX SPIKE RESULTS**

Lab Name: TestAmerica  
 Lot-Sample No.: J1C170593-1, J1FKV5

SDG: JP0123  
 Report No.: 46040

Parameter	SpikeResult, Orig Rst	Count	Total Uncert(2 s)	Rpt Unit, MDC MDA	Rpt Unit, CRDL	Rec- over	Expected, Uncert	Analysis, Prep Date	Aliquot Size	Analy Method, Primary Detector
Batch: 1076430	Work Order: MFTL61AC		Report DB ID: MFTL61CW	Orig Sa DB ID: 9MFTL610						
HEXCHROME	8.45E+00	0.0E+00	1.54E-01 mg/kg	N/A	75.32%	1.12E+01	3/21/11	2.5	71S6_CR6	
	1.55E-01							g		

Number of Results: 1

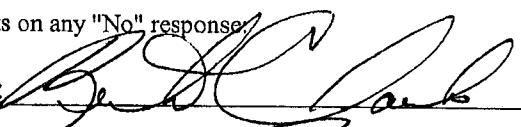
Comments:

**Richland Laboratory  
Data Review Check List  
Hexavalent Chromium**

Review Item	Yes (✓)	No (✗)	N/A (✗)	2 <sup>nd</sup> Level Review (✓)
<b>A. Initial Calibration</b>				
1. Performed at required frequency with required number of levels?	✓			✓
2. Correlation coefficient within QC limits?	✓			✓
3. Initial calibration verification (ICV) analyzed immediately after calibration and results within QC limits?	✓			✓
4. Initial calibration blank (ICB) analyzed immediately after ICV and concentrations of all parameters $\leq$ reporting limit?	✓			✓
<b>B. Continuing Calibration</b>				
1. CCV analyzed at required frequency and all parameters within QC limits?	✓			✓
2. CCB analyzed at required frequency and all results $\leq$ reporting limit?	✓			✓
<b>C. Sample Analysis</b>			✓	N/A
1. Were any samples with concentrations above the linear range for any parameter diluted and reanalyzed?				N/A
2. Were all sample holding times met?	✓			✓
<b>D. QC Samples</b>				✓
1. All results for the preparation blank below limits?				✓
2. MS or MS/MSD recoveries within QC limits and %RPD (for MSD) acceptable?	✓			✓
3. LCS percent recovery within QC limits and %RPD (for LCSD) acceptable?	✓			✓
4. Analytical spikes within QC limits where applicable?	✓			✓
5. ICP only: One serial dilution performed per SDG?			✓	N/A
6. ICP only: CRDL standard (CRI or CRA) analyzed at required frequency?		✓		N/A
7. ICP only: Interference check samples (ICSA, ICSAB) and HICAL analyzed at the required frequencies and within QC limits?		✓		N/A

Review Item	Yes (✓)	No (✓)	N/A (✓)	2 <sup>nd</sup> Level Review (✓)
<b>E. Other</b>			✓	N/A
1. Are all nonconformances included and noted?				
2. Is the correct date and time of analysis shown?	✓			✓
3. Did the analyst sign and date the front page of the analytical run?	✓			✓
4. Correct methodology used?	✓			✓
5. Transcriptions checked?	✓			✓
6. Calculations checked at minimum frequency?	✓			✓
7. Units checked?	✓			✓

Comments on any "No" response:

Analyst:   
 Second-Level Review: 

Date: 3-22-11

Date: 3/22/11



**Radiological Counting Facility***Non-reg*

Analysis Report for RCF22027

J18KV9 SAF: RC-074 116-D-5 in-process soil

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**GAMMA SPECTRUM ANALYSIS**

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Sample Identification : RCF22027  
 Sample Description : J18KV9 SAF: RC-074 116-D-5 in-process soil  
 Sample Type : 80 gram pill box  
 Unit :  
 Sample Point :  
 Sample Size : 8.600E+01 grams  
 Facility : Default  
 Sample Taken On : 4/6/2009 1:06:00PM  
 Acquisition Started : 4/7/2009 11:36:38AM  
 Procedure : 80 gram pill box  
 Operator : RCT  
 Detector Name : PGTWHITE  
 Geometry : 80 Gram Pill Box  
 Live Time : 3600.0 seconds  
 Real Time : 3600.7 seconds  
 Dead Time : 0.02 %  
 Peak Locate Threshold : 3.00  
 Peak Locate Range (in channels) : 80 - 4096  
 Peak Area Range (in channels) : 80 - 4096  
 Identification Energy Tolerance : 1.300 keV  
 Energy Calibration Used Done On : 1/21/2009  
 Efficiency Calibration Used Done On : 2/9/2009  
 Efficiency Calibration Description : 80gPB EffCal012009(71385A-673)  
 Sample Number : 27973

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**INTERFERENCE CORRECTED REPORT**

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<b>Nuclide Name</b>	<b>Nuclide Id</b>	<b>Wt mean Activity</b>	<b>Wt mean Activity Uncertainty</b>	<b>Comments</b>
	<i>Confidence</i>	(pCi/grams)		
K-40	0.994	1.20E+01	2.40E+00	
PB-212	0.706	7.13E-01	1.31E-01	
RA-226d	0.675	5.17E-01	1.39E-01	
TH-232d	0.740	4.45E-01	1.42E-01	
U-235	0.547	8.49E-02	9.80E-02	
U-238d	0.342	5.79E-01	3.78E-01	

Sample Check-in List

Date/Time Received: 3-17-11 1135 GM Screen Result (out) 0 3 (-) - 5 Initials RR

Client WCH SDG #: JPO123 NA [ ] SAF #: RC-182 NA [ ]

Work Order Number: J1C170593 Chain of Custody #: RC-182-062

Shipping Container ID: Hand Delivered NA [ ] At Bill #: \_\_\_\_\_ NA [ ]

Item 1 through 5 for shipping container only. Initial appropriate response.

1. Custody Seals or shipping container intact? Yes RR No [ ] No Custody Seal [ ]

2. Custody Seals dated and signed? Yes RR No [ ] No Custody Seal [ ]

3. Chain of Custody record present? Yes RR No [ ]

4. Cooler temperature: On Ice NA [ ] 5. Vermiculite/packing materials is NA [ ] Wet [ ] Dry RR

Item 6 through 10 for samples. Initial appropriate response.

6. Number of samples in shipping container (Each sample may contain multiple bottles): 4 Samples @ 1 per

7. Sample holding times exceeded? NA [ ] Yes [ ] No RR

8. Samples have:

RR custody seals

\_\_\_\_\_ hazard labels  
\_\_\_\_\_ appropriate sample labels



9. Samples:

RR are in good condition  
RR are broken

(SOIL)

\_\_\_\_\_ are leaking  
\_\_\_\_\_ have air bubbles (Only for samples requiring no head space)

10. Sample pH appropriate for analysis requested Yes [ ] No [ ] N/A RR (Note discrepancies in #13)  
(If acidification necessary, then document sample ID, initial pH, amount of HNO<sub>3</sub> added and pH after addition)

RPL ID # of preservative used: N/A

11. Sample Location, Sample Collector Listed? \* Yes RR No [ ]  
\*For documentation only. No corrective action needed.

12. Were any anomalies identified in sample receipt? Yes [ ] No RR

13. Description of anomalies (include sample numbers): NA 1

See other side for additional comments

Sample Custodian: Ron Peters Date: 3-17-11 1135

Client Informed on \_\_\_\_\_ by \_\_\_\_\_ Person contacted \_\_\_\_\_

[ ] No action necessary; process as is

Project Manager: Ronald Peters Date: 3-17-11

3/21/2011 10:54:01 AM  
 Lab ID: 2127642, Washington Closure Hanford LLC  
 Bechtel Hanford, Inc.  
 AnalyDueDate: 03/24/2011  
 Batch: 1076430 SOIL mg/kg PM, Quote: RW2, 27038

SEQ Batch, Test: None  
 Laboratories: MFTL6-1-AA  
 J1C170593-1-SAMP  
 03/16/2011 12:25 AmRec: 1X60MLG #Containers: 1  
 2 MFTL6-1-AC-S

J1C170593-1-MS  
 03/16/2011 12:25 AmRec: 1X60MLG #Containers: 1

J1C170593-1-DUP  
 03/16/2011 12:25 AmRec: 1X60MLG #Containers: 1

J1C170593-1-AD-X  
 03/16/2011 12:35 AmRec: 1X60MLG #Containers: 1

J1C170593-1-DUP  
 03/16/2011 12:35 AmRec: 1X60MLG #Containers: 1

J1C170593-2-SAMP  
 03/16/2011 12:35 AmRec: 1X60MLG #Containers: 1

J1C170593-3-SAMP  
 03/16/2011 12:45 AmRec: 1X60MLG #Containers: 1

J1C170593-4-SAMP  
 03/16/2011 12:45 AmRec: 1X60MLG #Containers: 1

J1C170000-430-BLK  
 03/21/2011 10:53 pd AmRec:  
 #Containers: 1

Sample Preparation/Analysis							
Work Order, Lot, Sample Date/Time	Total Amt/Unit	Initial Aliquot Amt/Unit	QC Tracer Prep Date	Dish Size	Ppt or Geometry	Count Time Min	Detector Id
MFTL6-1-AA J1C170593-1-SAMP 03/16/2011 12:25			AmRec: 1X60MLG				Scr: Alpha: Beta:
2 MFTL6-1-AC-S J1C170593-1-MS 03/16/2011 12:25			AmRec: 1X60MLG				Scr: Alpha: Beta:
3 MFTL6-1-AD-X J1C170593-1-DUP 03/16/2011 12:25			AmRec: 1X60MLG				Scr: Alpha: Beta:
4 MFTMD-1-AA J1C170593-1-DUP 03/16/2011 12:35			AmRec: 1X60MLG				Scr: Alpha: Beta:
5 MFTME-1-AA J1C170593-2-SAMP 03/16/2011 12:35			AmRec: 1X60MLG				Scr: Alpha: Beta:
6 MFTMK-1-AA J1C170593-3-SAMP 03/16/2011 12:45			AmRec: 1X60MLG				Scr: Alpha: Beta:
7 MFTXV-1-AA-B J1C170000-430-BLK 03/21/2011 10:53 pd			AmRec:				Scr: Alpha: Beta:

Key: In - Initial Amt, fi - Final Amt, di - Diluted Amt, s1 - Sep1, s2 - Sep2  
 pd - Prep Dt, dc - Date Chg, r - Reference Dt, ec-Enrichment Cell, ct-Cocktail Added  
 Richland Wa.

ISV - Insufficient Volume for Analysis

WO Cnt: 7  
 LOCO v.4.8.49

3/21/2011 10:54:01 AM

**Sample Preparation/Analysis**

Balance Id:

DW Alkaline Digestion by method 3060A  
 EA Chromium, Hexavalent (7196A)  
 SI CLIENT: HANFORD

Pipet #:

AnalyDueDate: 03/24/2011

Sep1 DT/Tm Tech:

Batch: 1076430  
LSEQ Batch, Test: None

Sep2 DT/Tm Tech:

mg/kg

Work Order, Lot, Sample Date/Time	Total Amt/Unit	Initial Aliquot Amt/Unit	QC Tracer Prep Date	Dish Size	Ppt or Geometry	Count Time Min	Detector Id	Count On   Off (24hr) Circle	CR Analyst, Init/Date	Comments:
MFTXV-1-AC-C										

J1C170000-430-LCS	AmRec:	#Containers: 1	Scr:	Alpha:	Beta:
03/21/2011 10:53 pd					

Comments:

All Clients for Batch:

127642, Washington Closure Hanford LLC

Bechtel Hanford, Inc.

, RW2, 27038

MFTL61AA-SAMP Constituent List: HEXCHROME RDL:0.1548 mg/kg	LCL:80	UCL:120	RED:20	
MFTL61AC-MS Constituent List: HEXCHROME RDL:0.35 mg/kg	LCL:75	UCL:125	RED:20	
MFTXV1AA-BLK: HEXCHROME RDL:0.1548 mg/kg	LCL:	UCL:	RED:	
MFTXV1AC-LCS: HEXCHROME RDL:0.35 mg/kg	LCL:80	UCL:120	RED:20	
Uncert Level (#s) : 2 Decay to SaDt: Y Blk Subt.: N Sci.Not.: Y ODRs: B				
MFTL61AC-MS Calc Info: Uncert Level (#s) : 2 Decay to SaDt: Y Blk Subt.: N Sci.Not.: Y ODRs: B				
MFTXV1AA-BLK: Uncert Level (#s) : 2 Decay to SaDt: Y Blk Subt.: N Sci.Not.: Y ODRs: B				
MFTXV1AC-LCS: Uncert Level (#s) : 2 Decay to SaDt: Y Blk Subt.: N Sci.Not.: Y ODRs: B				

TestAmerica Richland Wa.	Key: In - Initial Amt, fi - Final Amt, di - Diluted Amt, s1 - Sep1, s2 - Sep2 pd - Prep Dt, dc - Date Chg, r - Reference Dt, ec-Enrichment Cell, ct-Cocktailed Added	ISV - Insufficient Volume for Analysis	WO Cnt: 8 ICOC v4.6.4G
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## ANALYTICAL REPORT

Job Number: 280-13665-1

SDG Number: JP0123

Job Description: SAF# RC-182

For:

Washington Closure Hanford  
2620 Fermi Avenue  
Richland, WA 99354

Attention: Joan H Kessner



Approved for release.  
Kae E Yoder  
Project Manager II  
4/9/2011 4:12 PM

---

Kae E Yoder  
Project Manager II  
kae.yoder@testamericainc.com  
04/09/2011

The test results in this report relate only to the samples in this report and meet all requirements of NELAC, with any exceptions noted. Pursuant to NELAP, this report shall not be reproduced except in full, without the written approval of the laboratory. All questions regarding this report should be directed to the TestAmerica Denver Project Manager.

The Lab Certification ID# is E87667.

Reporting limits are adjusted for sample size used, dilutions and moisture content if applicable.

**TestAmerica Laboratories, Inc.**

TestAmerica Denver 4955 Yarrow Street, Arvada, CO 80002

Tel (303) 736-0100 Fax (303) 431-7171 [www.testamericainc.com](http://www.testamericainc.com)



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## CASE NARRATIVE

**Client: Washington Closure Hanford**

**Project: WASHINGTON CLOSURE HANFORD**

**Report Number: 280-13665-1**

**SDG #: JP0123**  
**SAF#: RC-182**

**Date SDG Closed: March 18, 2011**

**Data Deliverable: 7 Day / Summary**

<b>CLIENT ID</b>	<b>LAB ID</b>	<b>ANALYSES REQUESTED</b>	<b>ANALYSES PERFORMED</b>
J1FKV5	280-13665-1	6010/7471/1311-6010-7470	6010B/7471A/1311-6010B-7470A
J1FKV6	280-13665-2	6010/7471/1311-6010-7470	6010B/7471A/1311-6010B-7470A
J1FKV7	280-13665-3	6010/7471/1311-6010-7470	6010B/7471A/1311-6010B-7470A
J1FKV8	280-13665-4	6010/7471/1311-6010-7470	6010B/7471A/1311-6010B-7470A

I certify that this data package is in compliance with the SOW, both technically and for completeness, for other than the conditions detailed in this Case Narrative. Release of the data contained in this hard copy data package has been authorized by the Laboratory Manager or a designee, as verified by the signature on the Report Cover.

With exceptions noted as flags or footnotes, standard analytical protocols were followed in the analysis of the samples and no problems were encountered or anomalies observed. All laboratory quality control samples analyzed in conjunction with the samples in this project were within established control limits, with any exceptions noted. Calculations are performed before rounding to avoid round-off errors in calculated results.

This report includes reporting limits (RLs) less than TestAmerica Denver's practical quantitation limits. These reporting limits are being used specifically at the client's request to meet the needs of this project. Please note that data are not normally reported to these levels without qualification, since they are inherently less reliable and potentially less defensible than required by the current NELAC standards.

The results, RLs and MDLs included in this report have been adjusted for dry weight, as appropriate.

All holding times were met and proper preservation noted for the methods performed on these samples, unless otherwise detailed in the individual sections below.

### **RECEIPT**

The samples were received on 3/18/2011; the samples arrived in good condition, properly preserved and on ice. The temperatures of the coolers at receipt were 2.4 C, 2.7 C, 3.4 C and 4.7 C.

Samples requesting TCLP Metals 1311/6010B/7470A analyses were leached and placed on hold, as instructed on the chain-of-custody. On 3/21/2011, the client instructed the laboratory to proceed with the requested TCLP Metals 1311/6010B/7470A analyses.

### **TOTAL METALS - SW846 6010B/7471A**

Serial dilution of a digestate in batch 280-58310 indicates that physical and chemical interferences are present for several elements. Results have been flagged with an "X".

Low levels of Barium, Calcium and Magnesium are present in the method blank associated with batch 280-58310. Because the concentrations in the method blank are not present at levels greater than the reporting limits, corrective action is deemed unnecessary.

It can be noted that the sample amount was greater than four times the spike amount for Aluminum, Iron and Manganese in the Matrix Spike performed on sample J1FKV5; therefore, control limits are not applicable.

The SW846 6010B Matrix Spike performed on sample J1FKV5 exhibited percent recoveries outside the control limits for Calcium, Silicon and Magnesium, and the associated sample results have been flagged "N". There is no indication that the analytical system was operating out of control, and method accuracy has been verified by the acceptable LCS analysis data; therefore, corrective action is deemed unnecessary.

The SW846 6010B duplicate analysis of sample J1FKV5 exhibited RPD data outside the control limits for Boron, and the associated sample result has been flagged "M". There is no indication that the analytical system was operating out of control, and method accuracy has been verified by the acceptable LCS analysis data; therefore, corrective action is deemed unnecessary.

The Mercury duplicate analysis of sample J1FKV7 exhibited RPD data outside the control limits, and the associated sample result has been flagged "M". There is no indication that the analytical system was operating out of control, and method accuracy has been verified by the acceptable LCS analysis data; therefore, corrective action is deemed unnecessary.

No other anomalies were encountered.

**TCLP METALS - SW846 1311/6010B/7470A**

Low levels of Barium are present in the method blank associated with batch 280-58636. Because the concentration in the method blank is not present at a level greater than the reporting limit, corrective action is deemed unnecessary.

Mercury was recovered outside the control limits, biased high, in the LCS associated with batch 280-58743, and the associated sample results have been flagged "N". This is an indicator that data may be biased high. As no detectable concentrations of Mercury are present in the associated samples, corrective action is deemed unnecessary.

No other anomalies were encountered.

## DATA REPORTING QUALIFIERS

Client: Washington Closure Hanford

Job Number: 280-13665-1

Sdg Number: JP0123

Lab Section	Qualifier	Description
Metals		
	U	Analyzed for but not detected.
	B	Estimated result. Result is less than the RL, but greater than MDL
	4	MS, MSD: The analyte present in the original sample is 4 times greater than the matrix spike concentration; therefore, control limits are not applicable.
	N	Recovery exceeds upper or lower control limits
	M	Sample duplicate precision not met.
	X	Serial dilution in the analytical batch indicates that physical and chemical interferences are present.

## METHOD SUMMARY

Client: Washington Closure Hanford

Job Number: 280-13665-1  
Sdg Number: JP0123

Description	Lab Location	Method	Preparation Method
<b>Matrix: Solid</b>			
Metals (ICP)	TAL DEN	SW846 6010B	
Preparation, Metals	TAL DEN		SW846 3050B
TCLP Metals (ICP)	TAL DEN	SW846 6010B	
TCLP Extraction	TAL DEN		SW846 1311
Preparation, Total Metals	TAL DEN		SW846 3010A
TCLP Mercury	TAL DEN	SW846 7470A	
TCLP Extraction	TAL DEN		SW846 1311
Preparation, Mercury	TAL DEN		SW846 7470A
Mercury (CVAA)	TAL DEN	SW846 7471A	
Preparation, Mercury	TAL DEN		SW846 7471A
ASTM D-2216	TAL DEN	ASTM D-2216	

### Lab References:

TAL DEN = TestAmerica Denver

### Method References:

ASTM = ASTM International

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

## METHOD / ANALYST SUMMARY

Client: Washington Closure Hanford

Job Number: 280-13665-1  
Sdg Number: JP0123

Method	Analyst	Analyst ID
SW846 6010B	Bowen, Heidi E	HEB
SW846 6010B	Harre, John K	JKH
SW846 7470A	Stoltz, Katie	KS
SW846 7471A	Stoltz, Katie	KS
ASTM D-2216	Berry III, Paul B	PBB

## SAMPLE SUMMARY

Client: Washington Closure Hanford

Job Number: 280-13665-1

Sdg Number: JP0123

Lab Sample ID	Client Sample ID	Client Matrix	Date/Time Sampled	Date/Time Received
280-13665-1	J1FKV5	Solid	03/16/2011 1225	03/18/2011 0930
280-13665-2	J1FKV6	Solid	03/16/2011 1235	03/18/2011 0930
280-13665-3	J1FKV7	Solid	03/16/2011 1245	03/18/2011 0930
280-13665-4	J1FKV8	Solid	03/16/2011 1255	03/18/2011 0930

# **SAMPLE RESULTS**

**Analytical Data**

Client: Washington Closure Hanford

Job Number: 280-13665-1

Sdg Number: JP0123

Client Sample ID: J1FKV5

Lab Sample ID: 280-13665-1

Date Sampled: 03/16/2011 1225

Client Matrix: Solid

% Moisture: 11.3

Date Received: 03/18/2011 0930

**6010B Metals (ICP)**

Analysis Method:	6010B	Analysis Batch:	280-58670	Instrument ID:	MT_026
Prep Method:	3050B	Prep Batch:	280-58310	Lab File ID:	26b032111.asc
Dilution:	1.0			Initial Weight/Volume:	1.16 g
Analysis Date:	03/21/2011 1915			Final Weight/Volume:	100 mL
Prep Date:	03/21/2011 0800				

Analyte	DryWt Corrected: Y	Result (mg/Kg)	Qualifier	MDL	RL
Aluminum		9960		1.5	4.9
Antimony		0.37	U	0.37	0.58
Arsenic		4.0		0.64	0.97
Barium		88.1		0.074	0.49
Beryllium		0.12	B	0.032	0.19
Boron		3.3	M	0.95	1.9
Cadmium		0.29		0.040	0.19
Calcium		6980	N	13.7	48.6
Chromium		13.5		0.056	0.19
Cobalt		6.6	X	0.097	0.97
Copper		16.6		0.21	0.97
Iron		17400	X	3.7	4.9
Lead		8.9		0.26	0.49
Manganese		306	X	0.097	0.97
Nickel		12.7	X	0.12	3.9
Potassium		1990		39.8	291
Selenium		1.5		0.84	0.97
Silicon		221	N	5.5	9.7
Silver		0.16	U	0.16	0.19
Sodium		634		57.3	117
Vanadium		39.8	X	0.091	1.9
Zinc		64.6	X	0.39	0.97

Analysis Method:	6010B	Analysis Batch:	280-58881	Instrument ID:	MT_026
Prep Method:	3050B	Prep Batch:	280-58310	Lab File ID:	26a032211.asc
Dilution:	1.0			Initial Weight/Volume:	1.16 g
Analysis Date:	03/22/2011 1636			Final Weight/Volume:	100 mL
Prep Date:	03/21/2011 0800				

Analyte	DryWt Corrected: Y	Result (mg/Kg)	Qualifier	MDL	RL
Magnesium		5950	N	3.6	19.4
Molybdenum		0.34	B	0.25	1.9

**6010B TCLP Metals (ICP)-TCLP**

Analysis Method:	6010B	Analysis Batch:	280-58856	Instrument ID:	MT_025
Prep Method:	3010A	Prep Batch:	280-58636	Lab File ID:	25A7032211.asc
Dilution:	1.0	Leach Batch:	280-58346	Initial Weight/Volume:	10 mL
Analysis Date:	03/23/2011 0215			Final Weight/Volume:	50 mL
Prep Date:	03/22/2011 1500				
Leach Date:	03/18/2011 1700				

Analyte	DryWt Corrected: N	Result (mg/L)	Qualifier	MDL	RL
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**Analytical Data**

Client: Washington Closure Hanford

Job Number: 280-13665-1

Sdg Number: JP0123

Client Sample ID: J1FKV5

Lab Sample ID: 280-13665-1

Date Sampled: 03/16/2011 1225

Client Matrix: Solid

Date Received: 03/18/2011 0930

**6010B TCLP Metals (ICP)-TCLP**

Analyte	DryWt Corrected: N	Result (mg/L)	Qualifier	MDL	RL
Arsenic		0.022	U	0.022	0.50
Barium		0.083	B	0.0020	1.0
Cadmium		0.0020	U	0.0020	0.10
Chromium		0.0032	B	0.0030	0.50
Lead		0.013	U	0.013	0.50
Selenium		0.024	U	0.024	0.10
Silver		0.0040	U	0.0040	0.50

**7470A TCLP Mercury-TCLP**

Analysis Method:	7470A	Analysis Batch:	280-59101	Instrument ID:	MT_033
Prep Method:	7470A	Prep Batch:	280-58743	Lab File ID:	110323AD.TXT
Dilution:	1.0	Leach Batch:	280-58346	Initial Weight/Volume:	10 mL
Analysis Date:	03/23/2011 2111			Final Weight/Volume:	10 mL
Prep Date:	03/23/2011 1300				
Leach Date:	03/18/2011 1700				

Analyte	DryWt Corrected: N	Result (mg/L)	Qualifier	MDL	RL
Mercury		0.000030	U N	0.000030	0.0020

**7471A Mercury (CVAA)**

Analysis Method:	7471A	Analysis Batch:	280-58997	Instrument ID:	MT_033
Prep Method:	7471A	Prep Batch:	280-58355	Lab File ID:	110322AD.txt
Dilution:	1.0			Initial Weight/Volume:	0.62 g
Analysis Date:	03/22/2011 1744			Final Weight/Volume:	50 mL
Prep Date:	03/22/2011 1255				

Analyte	DryWt Corrected: Y	Result (mg/Kg)	Qualifier	MDL	RL
Mercury		0.0065	B	0.0060	0.019

**Analytical Data**

Client: Washington Closure Hanford

Job Number: 280-13665-1

Sdg Number: JP0123

Client Sample ID: J1FKV6

Lab Sample ID: 280-13665-2

Date Sampled: 03/16/2011 1235

Client Matrix: Solid

% Moisture: 4.0

Date Received: 03/18/2011 0930

**6010B Metals (ICP)**

Analysis Method:	6010B	Analysis Batch:	280-58670	Instrument ID:	MT_026
Prep Method:	3050B	Prep Batch:	280-58310	Lab File ID:	26b032111.asc
Dilution:	1.0			Initial Weight/Volume:	1.20 g
Analysis Date:	03/21/2011 1924			Final Weight/Volume:	100 mL
Prep Date:	03/21/2011 0800				

Analyte	DryWt Corrected: Y	Result (mg/Kg)	Qualifier	MDL	RL
Aluminum		4870		1.3	4.3
Antimony		0.33	U	0.33	0.52
Arsenic		2.0		0.57	0.87
Barium		34.3		0.066	0.43
Beryllium		0.029	U	0.029	0.17
Boron		0.85	U	0.85	1.7
Cadmium		0.036	U	0.036	0.17
Calcium		4690		12.2	43.4
Chromium		9.4		0.050	0.17
Cobalt		4.1	X	0.087	0.87
Copper		11.5		0.19	0.87
Iron		11400	X	3.3	4.3
Lead		2.7		0.23	0.43
Manganese		211	X	0.087	0.87
Nickel		8.9	X	0.11	3.5
Potassium		515		35.6	260
Selenium		1.8		0.75	0.87
Silicon		142		4.9	8.7
Silver		0.14	U	0.14	0.17
Sodium		204		51.2	104
Vanadium		31.7	X	0.082	1.7
Zinc		26.9	X	0.35	0.87

Analysis Method:	6010B	Analysis Batch:	280-58881	Instrument ID:	MT_026
Prep Method:	3050B	Prep Batch:	280-58310	Lab File ID:	26a032211.asc
Dilution:	1.0			Initial Weight/Volume:	1.20 g
Analysis Date:	03/22/2011 1646			Final Weight/Volume:	100 mL
Prep Date:	03/21/2011 0800				

Analyte	DryWt Corrected: Y	Result (mg/Kg)	Qualifier	MDL	RL
Magnesium		3450		3.2	17.4
Molybdenum		0.36	B	0.23	1.7

**6010B TCLP Metals (ICP)-TCLP**

Analysis Method:	6010B	Analysis Batch:	280-58856	Instrument ID:	MT_025
Prep Method:	3010A	Prep Batch:	280-58636	Lab File ID:	25A7032211.asc
Dilution:	1.0	Leach Batch:	280-58346	Initial Weight/Volume:	10 mL
Analysis Date:	03/23/2011 0218			Final Weight/Volume:	50 mL
Prep Date:	03/22/2011 1500				
Leach Date:	03/18/2011 1700				

Analyte	DryWt Corrected: N	Result (mg/L)	Qualifier	MDL	RL
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**Analytical Data**

Client: Washington Closure Hanford

Job Number: 280-13665-1

Sdg Number: JP0123

Client Sample ID: J1FKV6

Lab Sample ID: 280-13665-2

Date Sampled: 03/16/2011 1235

Client Matrix: Solid

Date Received: 03/18/2011 0930

**6010B TCLP Metals (ICP)-TCLP**

Analyte	DryWt Corrected: N	Result (mg/L)	Qualifier	MDL	RL
Arsenic		0.022	U	0.022	0.50
Barium		0.35	B	0.0020	1.0
Cadmium		0.0020	U	0.0020	0.10
Chromium		0.0030	U	0.0030	0.50
Lead		0.080	B	0.013	0.50
Selenium		0.024	U	0.024	0.10
Silver		0.0040	U	0.0040	0.50

**7470A TCLP Mercury-TCLP**

Analysis Method:	7470A	Analysis Batch:	280-59101	Instrument ID:	MT_033
Prep Method:	7470A	Prep Batch:	280-58743	Lab File ID:	110323AD.TXT
Dilution:	1.0	Leach Batch:	280-58346	Initial Weight/Volume:	10 mL
Analysis Date:	03/23/2011 2113			Final Weight/Volume:	10 mL
Prep Date:	03/23/2011 1300				
Leach Date:	03/18/2011 1700				

Analyte	DryWt Corrected: N	Result (mg/L)	Qualifier	MDL	RL
Mercury		0.000030	U N	0.000030	0.0020

**7471A Mercury (CVAA)**

Analysis Method:	7471A	Analysis Batch:	280-58997	Instrument ID:	MT_033
Prep Method:	7471A	Prep Batch:	280-58355	Lab File ID:	110322AD.txt
Dilution:	1.0			Initial Weight/Volume:	0.63 g
Analysis Date:	03/22/2011 1746			Final Weight/Volume:	50 mL
Prep Date:	03/22/2011 1255				

Analyte	DryWt Corrected: Y	Result (mg/Kg)	Qualifier	MDL	RL
Mercury		0.0055	U	0.0055	0.017

## Analytical Data

Client: Washington Closure Hanford

Job Number: 280-13665-1

Sdg Number: JP0123

Client Sample ID: J1FKV7

Lab Sample ID: 280-13665-3

Date Sampled: 03/16/2011 1245

Client Matrix: Solid

% Moisture: 4.0

Date Received: 03/18/2011 0930

### 6010B Metals (ICP)

Analysis Method:	6010B	Analysis Batch:	280-58670	Instrument ID:	MT_026
Prep Method:	3050B	Prep Batch:	280-58310	Lab File ID:	26b032111.asc
Dilution:	1.0			Initial Weight/Volume:	1.11 g
Analysis Date:	03/21/2011 1927			Final Weight/Volume:	100 mL
Prep Date:	03/21/2011 0800				

Analyte	DryWt Corrected: Y	Result (mg/Kg)	Qualifier	MDL	RL
Aluminum		5490		1.5	4.7
Antimony		0.36	U	0.36	0.56
Arsenic		2.0		0.62	0.94
Barium		33.3		0.071	0.47
Beryllium		0.049	B	0.031	0.19
Boron		0.92	U	0.92	1.9
Cadmium		0.038	U	0.038	0.19
Calcium		6160		13.2	46.9
Chromium		8.9		0.054	0.19
Cobalt		4.0	X	0.094	0.94
Copper		11.3		0.20	0.94
Iron		11200	X	3.6	4.7
Lead		2.9		0.25	0.47
Manganese		225	X	0.094	0.94
Nickel		9.7	X	0.12	3.8
Potassium		567		38.5	282
Selenium		0.81	U	0.81	0.94
Silicon		158		5.3	9.4
Silver		0.15	U	0.15	0.19
Sodium		177		55.4	113
Vanadium		29.9	X	0.088	1.9
Zinc		26.0	X	0.37	0.94

Analysis Method:	6010B	Analysis Batch:	280-58881	Instrument ID:	MT_026
Prep Method:	3050B	Prep Batch:	280-58310	Lab File ID:	26a032211.asc
Dilution:	1.0			Initial Weight/Volume:	1.11 g
Analysis Date:	03/22/2011 1648			Final Weight/Volume:	100 mL
Prep Date:	03/21/2011 0800				

Analyte	DryWt Corrected: Y	Result (mg/Kg)	Qualifier	MDL	RL
Magnesium		3950		3.5	18.8
Molybdenum		0.24	U	0.24	1.9

### 6010B TCLP Metals (ICP)-TCLP

Analysis Method:	6010B	Analysis Batch:	280-58856	Instrument ID:	MT_025
Prep Method:	3010A	Prep Batch:	280-58636	Lab File ID:	25A7032211.asc
Dilution:	1.0	Leach Batch:	280-58346	Initial Weight/Volume:	10 mL
Analysis Date:	03/23/2011 0220			Final Weight/Volume:	50 mL
Prep Date:	03/22/2011 1500				
Leach Date:	03/18/2011 1700				

Analyte	DryWt Corrected: N	Result (mg/L)	Qualifier	MDL	RL
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**Analytical Data**

Client: Washington Closure Hanford

Job Number: 280-13665-1

Sdg Number: JP0123

Client Sample ID: J1FKV7

Lab Sample ID: 280-13665-3

Date Sampled: 03/16/2011 1245

Client Matrix: Solid

Date Received: 03/18/2011 0930

**6010B TCLP Metals (ICP)-TCLP**

Analyte	DryWt Corrected: N	Result (mg/L)	Qualifier	MDL	RL
Arsenic		0.022	U	0.022	0.50
Barium		0.28	B	0.0020	1.0
Cadmium		0.0020	U	0.0020	0.10
Chromium		0.0030	U	0.0030	0.50
Lead		0.013	U	0.013	0.50
Selenium		0.024	U	0.024	0.10
Silver		0.0040	U	0.0040	0.50

**7470A TCLP Mercury-TCLP**

Analysis Method:	7470A	Analysis Batch:	280-59101	Instrument ID:	MT_033
Prep Method:	7470A	Prep Batch:	280-58743	Lab File ID:	110323AD.TXT
Dilution:	1.0	Leach Batch:	280-58346	Initial Weight/Volume:	10 mL
Analysis Date:	03/23/2011 2115			Final Weight/Volume:	10 mL
Prep Date:	03/23/2011 1300				
Leach Date:	03/18/2011 1700				

Analyte	DryWt Corrected: N	Result (mg/L)	Qualifier	MDL	RL
Mercury		0.000030	U N	0.000030	0.0020

**7471A Mercury (CVAA)**

Analysis Method:	7471A	Analysis Batch:	280-58997	Instrument ID:	MT_033
Prep Method:	7471A	Prep Batch:	280-58355	Lab File ID:	110322AD.txt
Dilution:	1.0			Initial Weight/Volume:	0.65 g
Analysis Date:	03/22/2011 1748			Final Weight/Volume:	50 mL
Prep Date:	03/22/2011 1255				

Analyte	DryWt Corrected: Y	Result (mg/Kg)	Qualifier	MDL	RL
Mercury		0.0053	U N	0.0053	0.016

**Analytical Data**

Client: Washington Closure Hanford

Job Number: 280-13665-1

Sdg Number: JP0123

Client Sample ID: J1FKV8

Lab Sample ID: 280-13665-4

Date Sampled: 03/16/2011 1255

Client Matrix: Solid

% Moisture: 3.8

Date Received: 03/18/2011 0930

**6010B Metals (ICP)**

Analysis Method:	6010B	Analysis Batch:	280-58670	Instrument ID:	MT_026
Prep Method:	3050B	Prep Batch:	280-58310	Lab File ID:	26b032111.asc
Dilution:	1.0			Initial Weight/Volume:	1.09 g
Analysis Date:	03/21/2011 1929			Final Weight/Volume:	100 mL
Prep Date:	03/21/2011 0800				

Analyte	DryWt Corrected: Y	Result (mg/Kg)	Qualifier	MDL	RL
Aluminum		5480		1.5	4.8
Antimony		0.36	U	0.36	0.57
Arsenic		1.9		0.63	0.95
Barium		34.4		0.072	0.48
Beryllium		0.046	B	0.031	0.19
Boron		0.93	U	0.93	1.9
Cadmium		0.088	B	0.039	0.19
Calcium		5520		13.4	47.7
Chromium		10.6		0.055	0.19
Cobalt		4.1	X	0.095	0.95
Copper		11.3		0.21	0.95
Iron		11200	X	3.6	4.8
Lead		3.1		0.26	0.48
Manganese		219	X	0.095	0.95
Nickel		10.2	X	0.12	3.8
Potassium		579		39.1	286
Selenium		0.82	U	0.82	0.95
Silicon		149		5.4	9.5
Silver		0.15	U	0.15	0.19
Sodium		195		56.3	114
Vanadium		30.1	X	0.090	1.9
Zinc		29.4	X	0.38	0.95

Analysis Method:	6010B	Analysis Batch:	280-58881	Instrument ID:	MT_026
Prep Method:	3050B	Prep Batch:	280-58310	Lab File ID:	26a032211.asc
Dilution:	1.0			Initial Weight/Volume:	1.09 g
Analysis Date:	03/22/2011 1650			Final Weight/Volume:	100 mL
Prep Date:	03/21/2011 0800				

Analyte	DryWt Corrected: Y	Result (mg/Kg)	Qualifier	MDL	RL
Magnesium		4100		3.5	19.1
Molybdenum		0.25	U	0.25	1.9

**6010B TCLP Metals (ICP)-TCLP**

Analysis Method:	6010B	Analysis Batch:	280-58856	Instrument ID:	MT_025
Prep Method:	3010A	Prep Batch:	280-58636	Lab File ID:	25A7032211.asc
Dilution:	1.0	Leach Batch:	280-58346	Initial Weight/Volume:	10 mL
Analysis Date:	03/23/2011 0223			Final Weight/Volume:	50 mL
Prep Date:	03/22/2011 1500				
Leach Date:	03/18/2011 1700				

Analyte	DryWt Corrected: N	Result (mg/L)	Qualifier	MDL	RL
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**Analytical Data**

Client: Washington Closure Hanford

Job Number: 280-13665-1

Sdg Number: JP0123

Client Sample ID: J1FKV8

Lab Sample ID: 280-13665-4

Date Sampled: 03/16/2011 1255

Client Matrix: Solid

Date Received: 03/18/2011 0930

**6010B TCLP Metals (ICP)-TCLP**

Analyte	DryWt Corrected: N	Result (mg/L)	Qualifier	MDL	RL
Arsenic		0.022	U	0.022	0.50
Barium		0.40	B	0.0020	1.0
Cadmium		0.0020	U	0.0020	0.10
Chromium		0.0030	U	0.0030	0.50
Lead		0.013	U	0.013	0.50
Selenium		0.024	U	0.024	0.10
Silver		0.0040	U	0.0040	0.50

**7470A TCLP Mercury-TCLP**

Analysis Method:	7470A	Analysis Batch:	280-59101	Instrument ID:	MT_033
Prep Method:	7470A	Prep Batch:	280-58743	Lab File ID:	110323AD.TXT
Dilution:	1.0	Leach Batch:	280-58346	Initial Weight/Volume:	10 mL
Analysis Date:	03/23/2011 2127			Final Weight/Volume:	10 mL
Prep Date:	03/23/2011 1300				
Leach Date:	03/18/2011 1700				

Analyte	DryWt Corrected: N	Result (mg/L)	Qualifier	MDL	RL
Mercury		0.000030	U N	0.000030	0.0020

**7471A Mercury (CVAA)**

Analysis Method:	7471A	Analysis Batch:	280-58997	Instrument ID:	MT_033
Prep Method:	7471A	Prep Batch:	280-58355	Lab File ID:	110322AD.txt
Dilution:	1.0			Initial Weight/Volume:	0.67 g
Analysis Date:	03/22/2011 1800			Final Weight/Volume:	50 mL
Prep Date:	03/22/2011 1255				

Analyte	DryWt Corrected: Y	Result (mg/Kg)	Qualifier	MDL	RL
Mercury		0.0051	U	0.0051	0.016

**Analytical Data**

Client: Washington Closure Hanford

Job Number: 280-13665-1

Sdg Number: JP0123

**General Chemistry****Client Sample ID:** J1FKV5

Lab Sample ID: 280-13665-1

Date Sampled: 03/16/2011 1225

Client Matrix: Solid

Date Received: 03/18/2011 0930

Analyte	Result	Qual	Units	RL	RL	Dil	Method
Percent Moisture	11.3	%		0.10	0.10	1.0	D-2216

Analysis Batch: 280-58328      Analysis Date: 03/18/2011 1504      DryWt Corrected: N

**Analytical Data**

Client: Washington Closure Hanford

Job Number: 280-13665-1

Sdg Number: JP0123

**General Chemistry****Client Sample ID:** J1FKV6

Lab Sample ID: 280-13665-2

Date Sampled: 03/16/2011 1235

Client Matrix: Solid

Date Received: 03/18/2011 0930

Analyte	Result	Qual	Units	RL	RL	Dil	Method
Percent Moisture	4.0	%		0.10	0.10	1.0	D-2216

Analysis Batch: 280-58328      Analysis Date: 03/18/2011 1504      DryWt Corrected: N

**Analytical Data**

Client: Washington Closure Hanford

Job Number: 280-13665-1

Sdg Number: JP0123

**General Chemistry****Client Sample ID:** J1FKV7

Lab Sample ID: 280-13665-3

Date Sampled: 03/16/2011 1245

Client Matrix: Solid

Date Received: 03/18/2011 0930

Analyte	Result	Qual	Units	RL	RL	Dil	Method
Percent Moisture	4.0		%	0.10	0.10	1.0	D-2216

Analysis Batch: 280-58328 Analysis Date: 03/18/2011 1504 DryWt Corrected: N

**Analytical Data**

Client: Washington Closure Hanford

Job Number: 280-13665-1

Sdg Number: JP0123

**General Chemistry****Client Sample ID:** J1FKV8

Lab Sample ID: 280-13665-4

Date Sampled: 03/16/2011 1255

Client Matrix: Solid

Date Received: 03/18/2011 0930

Analyte	Result	Qual	Units	RL	RL	Dil	Method
Percent Moisture	3.8		%	0.10	0.10	1.0	D-2216

Analysis Batch: 280-58328      Analysis Date: 03/18/2011 1504

DryWt Corrected: N

# **QUALITY CONTROL RESULTS**

## Quality Control Results

Client: Washington Closure Hanford

Job Number: 280-13665-1  
Sdg Number: JP0123

### QC Association Summary

Lab Sample ID	Client Sample ID	Report Basis	Client Matrix	Method	Prep Batch
<b>Metals</b>					
<b>Prep Batch: 280-58310</b>					
LCS 280-58310/2-A Lab Control Sample					
MB 280-58310/1-A	Method Blank	T	Solid	3050B	
280-13665-1	J1FKV5	T	Solid	3050B	
280-13665-1DU	Duplicate	T	Solid	3050B	
280-13665-1MS	Matrix Spike	T	Solid	3050B	
280-13665-2	J1FKV6	T	Solid	3050B	
280-13665-3	J1FKV7	T	Solid	3050B	
280-13665-4	J1FKV8	T	Solid	3050B	
<b>Prep Batch: 280-58346</b>					
LCS 280-58346/2-B Lab Control Sample		P	Solid	1311	
LCS 280-58346/2-C Lab Control Sample		P	Solid	1311	
LB 280-58346/1-B TCLP SPLPE Leachate Blank		P	Solid	1311	
LB 280-58346/1-C TCLP SPLPE Leachate Blank		P	Solid	1311	
280-13665-1 J1FKV5		P	Solid	1311	
280-13665-2 J1FKV6		P	Solid	1311	
280-13665-3 J1FKV7		P	Solid	1311	
280-13665-3DU Duplicate		P	Solid	1311	
280-13665-3MS Matrix Spike		P	Solid	1311	
280-13665-4 J1FKV8		P	Solid	1311	
280-13665-4DU Duplicate		P	Solid	1311	
280-13665-4MS Matrix Spike		P	Solid	1311	
<b>Prep Batch: 280-58355</b>					
LCS 280-58355/2-A Lab Control Sample		T	Solid	7471A	
MB 280-58355/1-A Method Blank		T	Solid	7471A	
280-13665-1 J1FKV5		T	Solid	7471A	
280-13665-2 J1FKV6		T	Solid	7471A	
280-13665-3 J1FKV7		T	Solid	7471A	
280-13665-3DU Duplicate		T	Solid	7471A	
280-13665-3MS Matrix Spike		T	Solid	7471A	
280-13665-4 J1FKV8		T	Solid	7471A	
<b>Prep Batch: 280-58636</b>					
LCS 280-58346/2-B Lab Control Sample		P	Solid	3010A	280-58346
LB 280-58346/1-B TCLP SPLPE Leachate Blank		P	Solid	3010A	280-58346
280-13665-1 J1FKV5		P	Solid	3010A	280-58346
280-13665-2 J1FKV6		P	Solid	3010A	280-58346
280-13665-3 J1FKV7		P	Solid	3010A	280-58346
280-13665-4 J1FKV8		P	Solid	3010A	280-58346
280-13665-4DU Duplicate		P	Solid	3010A	280-58346
280-13665-4MS Matrix Spike		P	Solid	3010A	280-58346

## Quality Control Results

Client: Washington Closure Hanford

Job Number: 280-13665-1  
Sdg Number: JP0123

### QC Association Summary

Lab Sample ID	Client Sample ID		Report Basis	Client Matrix	Method	Prep Batch
<b>Metals</b>						
<b>Analysis Batch:280-58670</b>						
LCS 280-58310/2-A						
LCS 280-58310/2-A	Lab Control Sample		T	Solid	6010B	280-58310
MB 280-58310/1-A	Method Blank		T	Solid	6010B	280-58310
280-13665-1	J1FKV5		T	Solid	6010B	280-58310
280-13665-1DU	Duplicate		T	Solid	6010B	280-58310
280-13665-1MS	Matrix Spike		T	Solid	6010B	280-58310
280-13665-2	J1FKV6		T	Solid	6010B	280-58310
280-13665-3	J1FKV7		T	Solid	6010B	280-58310
280-13665-4	J1FKV8		T	Solid	6010B	280-58310
<b>Prep Batch: 280-58743</b>						
LCS 280-58346/2-C	Lab Control Sample		P	Solid	7470A	280-58346
LB 280-58346/1-C	TCLP SPLPE Leachate Blank		P	Solid	7470A	280-58346
280-13665-1	J1FKV5		P	Solid	7470A	280-58346
280-13665-2	J1FKV6		P	Solid	7470A	280-58346
280-13665-3	J1FKV7		P	Solid	7470A	280-58346
280-13665-3DU	Duplicate		P	Solid	7470A	280-58346
280-13665-3MS	Matrix Spike		P	Solid	7470A	280-58346
280-13665-4	J1FKV8		P	Solid	7470A	280-58346
<b>Analysis Batch:280-58856</b>						
LCS 280-58346/2-B	Lab Control Sample		P	Solid	6010B	280-58636
LB 280-58346/1-B	TCLP SPLPE Leachate Blank		P	Solid	6010B	280-58636
280-13665-1	J1FKV5		P	Solid	6010B	280-58636
280-13665-2	J1FKV6		P	Solid	6010B	280-58636
280-13665-3	J1FKV7		P	Solid	6010B	280-58636
280-13665-4	J1FKV8		P	Solid	6010B	280-58636
280-13665-4DU	Duplicate		P	Solid	6010B	280-58636
280-13665-4MS	Matrix Spike		P	Solid	6010B	280-58636
<b>Analysis Batch:280-58881</b>						
LCS 280-58310/2-A	Lab Control Sample		T	Solid	6010B	280-58310
MB 280-58310/1-A	Method Blank		T	Solid	6010B	280-58310
280-13665-1	J1FKV5		T	Solid	6010B	280-58310
280-13665-1DU	Duplicate		T	Solid	6010B	280-58310
280-13665-1MS	Matrix Spike		T	Solid	6010B	280-58310
280-13665-2	J1FKV6		T	Solid	6010B	280-58310
280-13665-3	J1FKV7		T	Solid	6010B	280-58310
280-13665-4	J1FKV8		T	Solid	6010B	280-58310

## Quality Control Results

Client: Washington Closure Hanford

Job Number: 280-13665-1  
Sdg Number: JP0123

### QC Association Summary

Lab Sample ID	Client Sample ID	Report				
		Basis	Client Matrix	Method	Prep Batch	
<b>Metals</b>						
<b>Analysis Batch:280-58997</b>						
LCS 280-58355/2-A	Lab Control Sample	T	Solid	7471A	280-58355	
MB 280-58355/1-A	Method Blank	T	Solid	7471A	280-58355	
280-13665-1	J1FKV5	T	Solid	7471A	280-58355	
280-13665-2	J1FKV6	T	Solid	7471A	280-58355	
280-13665-3	J1FKV7	T	Solid	7471A	280-58355	
280-13665-3DU	Duplicate	T	Solid	7471A	280-58355	
280-13665-3MS	Matrix Spike	T	Solid	7471A	280-58355	
280-13665-4	J1FKV8	T	Solid	7471A	280-58355	
<b>Analysis Batch:280-59101</b>						
LCS 280-58346/2-C	Lab Control Sample	P	Solid	7470A	280-58743	
LB 280-58346/1-C	TCLP SPLPE Leachate Blank	P	Solid	7470A	280-58743	
280-13665-1	J1FKV5	P	Solid	7470A	280-58743	
280-13665-2	J1FKV6	P	Solid	7470A	280-58743	
280-13665-3	J1FKV7	P	Solid	7470A	280-58743	
280-13665-3DU	Duplicate	P	Solid	7470A	280-58743	
280-13665-3MS	Matrix Spike	P	Solid	7470A	280-58743	
280-13665-4	J1FKV8	P	Solid	7470A	280-58743	

#### Report Basis

P = TCLP

T = Total

#### General Chemistry

Analysis Batch:280-58328				
280-13665-1	J1FKV5	T	Solid	D-2216
280-13665-1DU	Duplicate	T	Solid	D-2216
280-13665-2	J1FKV6	T	Solid	D-2216
280-13665-3	J1FKV7	T	Solid	D-2216
280-13665-4	J1FKV8	T	Solid	D-2216

#### Report Basis

T = Total

## Quality Control Results

Client: Washington Closure Hanford

Job Number: 280-13665-1

Sdg Number: JP0123

**Method Blank - Batch: 280-58310****Method: 6010B****Preparation: 3050B**

Lab Sample ID:	MB 280-58310/1-A	Analysis Batch:	280-58670	Instrument ID:	MT_026
Client Matrix:	Solid	Prep Batch:	280-58310	Lab File ID:	26b032111.asc
Dilution:	1.0	Leach Batch:	N/A	Initial Weight/Volume:	1 g
Analysis Date:	03/21/2011 1910	Units:	mg/Kg	Final Weight/Volume:	100 mL
Prep Date:	03/21/2011 0800				
Leach Date:	N/A				

Analyte	Result	Qual	MDL	RL
Aluminum	1.6	U	1.6	5.0
Antimony	0.38	U	0.38	0.60
Arsenic	0.66	U	0.66	1.0
Barium	0.127	B	0.076	0.50
Beryllium	0.033	U	0.033	0.20
Boron	0.98	U	0.98	2.0
Cadmium	0.041	U	0.041	0.20
Calcium	14.28	B	14.1	50.0
Chromium	0.058	U	0.058	0.20
Cobalt	0.10	U	0.10	1.0
Copper	0.22	U	0.22	1.0
Iron	3.8	U	3.8	5.0
Lead	0.27	U	0.27	0.50
Manganese	0.10	U	0.10	1.0
Nickel	0.12	U	0.12	4.0
Potassium	41.0	U	41.0	300
Selenium	0.86	U	0.86	1.0
Silicon	5.7	U	5.7	10.0
Silver	0.16	U	0.16	0.20
Sodium	59.0	U	59.0	120
Vanadium	0.094	U	0.094	2.0
Zinc	0.40	U	0.40	1.0

**Method Blank - Batch: 280-58310****Method: 6010B****Preparation: 3050B**

Lab Sample ID:	MB 280-58310/1-A	Analysis Batch:	280-58881	Instrument ID:	MT_026
Client Matrix:	Solid	Prep Batch:	280-58310	Lab File ID:	26a032211.asc
Dilution:	1.0	Leach Batch:	N/A	Initial Weight/Volume:	1 g
Analysis Date:	03/22/2011 1632	Units:	mg/Kg	Final Weight/Volume:	100 mL
Prep Date:	03/21/2011 0800				
Leach Date:	N/A				

Analyte	Result	Qual	MDL	RL
Magnesium	5.02	B	3.7	20.0
Molybdenum	0.26	U	0.26	2.0

**Quality Control Results**

Client: Washington Closure Hanford

Job Number: 280-13665-1  
Sdg Number: JP0123**Lab Control Sample - Batch: 280-58310****Method: 6010B****Preparation: 3050B**

Lab Sample ID:	LCS 280-58310/2-A	Analysis Batch:	280-58670	Instrument ID:	MT_026
Client Matrix:	Solid	Prep Batch:	280-58310	Lab File ID:	26b032111.asc
Dilution:	1.0	Leach Batch:	N/A	Initial Weight/Volume:	1 g
Analysis Date:	03/21/2011 1913	Units:	mg/Kg	Final Weight/Volume:	100 mL
Prep Date:	03/21/2011 0800				
Leach Date:	N/A				

Analyte	Spike Amount	Result	% Rec.	Limit	Qual
Aluminum	200	179.4	90	82 - 116	
Antimony	50.0	50.70	101	82 - 110	
Arsenic	100	102.4	102	85 - 110	
Barium	200	177.4	89	87 - 112	
Beryllium	5.00	4.47	89	84 - 114	
Boron	100	88.65	89	81 - 110	
Cadmium	10.0	8.81	88	87 - 110	
Calcium	5000	4316	86	82 - 114	
Chromium	20.0	18.61	93	84 - 114	
Cobalt	50.0	45.94	92	87 - 110	
Copper	25.0	21.89	88	88 - 110	
Iron	100	92.35	92	87 - 120	
Lead	50.0	51.18	102	86 - 110	
Manganese	50.0	44.38	89	88 - 110	
Nickel	50.0	48.25	97	87 - 110	
Potassium	5000	4674	93	89 - 110	
Selenium	200	205.6	103	83 - 110	
Silicon	1000	103.6	10	10 - 70	
Silver	5.00	4.33	87	87 - 114	
Sodium	5000	4874	97	90 - 112	
Vanadium	50.0	44.18	88	88 - 110	
Zinc	50.0	44.36	89	76 - 114	

**Lab Control Sample - Batch: 280-58310****Method: 6010B****Preparation: 3050B**

Lab Sample ID:	LCS 280-58310/2-A	Analysis Batch:	280-58881	Instrument ID:	MT_026
Client Matrix:	Solid	Prep Batch:	280-58310	Lab File ID:	26a032211.asc
Dilution:	1.0	Leach Batch:	N/A	Initial Weight/Volume:	1 g
Analysis Date:	03/22/2011 1634	Units:	mg/Kg	Final Weight/Volume:	100 mL
Prep Date:	03/21/2011 0800				
Leach Date:	N/A				

Analyte	Spike Amount	Result	% Rec.	Limit	Qual
Magnesium	5000	4574	91	90 - 110	
Molybdenum	100	94.51	95	86 - 110	

**Quality Control Results**

Client: Washington Closure Hanford

Job Number: 280-13665-1

Sdg Number: JP0123

**Matrix Spike - Batch: 280-58310****Method: 6010B****Preparation: 3050B**

Lab Sample ID:	280-13665-1	Analysis Batch:	280-58670	Instrument ID:	MT_026
Client Matrix:	Solid	Prep Batch:	280-58310	Lab File ID:	26b032111.asc
Dilution:	1.0	Leach Batch:	N/A	Initial Weight/Volume:	1.04 g
Analysis Date:	03/21/2011 1922	Units:	mg/Kg	Final Weight/Volume:	100 mL
Prep Date:	03/21/2011 0800				
Leach Date:	N/A				

Analyte	Sample Result/Qual	Spike Amount	Result	% Rec.	Limit	Qual
Aluminum	9960	217	16100	2835	50 - 200	4
Antimony	0.37	U	54.2	36	20 - 200	
Arsenic	4.0		105.3	93	76 - 111	
Barium	88.1	217	331.9	113	52 - 159	
Beryllium	0.12	B	5.42	4.66	72 - 105	
Boron	3.3		108	83	75 - 107	
Cadmium	0.29		10.8	80	40 - 130	
Calcium	6980	5420	18950	221	43 - 165	N
Chromium	13.5	21.7	35.97	104	70 - 200	
Cobalt	6.6	54.2	53.34	86	72 - 106	
Copper	16.6	27.1	46.55	111	37 - 187	
Iron	17400	108	22680	4904	70 - 200	4
Lead	8.9	54.2	60.14	95	70 - 200	
Manganese	306	54.2	486.4	333	40 - 200	4
Nickel	12.7	54.2	62.76	92	61 - 126	
Potassium	1990	5420	9094	131	56 - 172	
Selenium	1.5	217	200.1	92	76 - 104	
Silicon	221	1080	428.9	19	20 - 200	N
Silver	0.16	U	5.42	4.37	75 - 141	
Sodium	634	5420	6335	105	78 - 111	
Vanadium	39.8	54.2	91.14	95	50 - 169	
Zinc	64.6	54.2	144.2	147	70 - 200	

**Matrix Spike - Batch: 280-58310****Method: 6010B****Preparation: 3050B**

Lab Sample ID:	280-13665-1	Analysis Batch:	280-58881	Instrument ID:	MT_026
Client Matrix:	Solid	Prep Batch:	280-58310	Lab File ID:	26a032211.asc
Dilution:	1.0	Leach Batch:	N/A	Initial Weight/Volume:	1.04 g
Analysis Date:	03/22/2011 1643	Units:	mg/Kg	Final Weight/Volume:	100 mL
Prep Date:	03/21/2011 0800				
Leach Date:	N/A				

Analyte	Sample Result/Qual	Spike Amount	Result	% Rec.	Limit	Qual
Magnesium	5950	5420	14230	153	64 - 145	N
Molybdenum	0.34	B	108	89.74	75 - 103	

**Quality Control Results**

Client: Washington Closure Hanford

Job Number: 280-13665-1

Sdg Number: JP0123

**Duplicate - Batch: 280-58310****Method: 6010B****Preparation: 3050B**

Lab Sample ID:	280-13665-1	Analysis Batch:	280-58670	Instrument ID:	MT_026
Client Matrix:	Solid	Prep Batch:	280-58310	Lab File ID:	26b032111.asc
Dilution:	1.0	Leach Batch:	N/A	Initial Weight/Volume:	1.16 g
Analysis Date:	03/21/2011 1919	Units:	mg/Kg	Final Weight/Volume:	100 mL
Prep Date:	03/21/2011 0800				
Leach Date:	N/A				

Analyte	Sample Result/Qual	Result	RPD	Limit	Qual
Aluminum	9960	11000	10	40	
Antimony	0.37	U	0.37	NC	40
Arsenic	4.0	4.22	4	30	
Barium	88.1	100.6	13	30	
Beryllium	0.12	B	0.149	19	30
Boron	3.3	5.43	49	30	M
Cadmium	0.29	0.236	20	30	
Calcium	6980	8008	14	30	
Chromium	13.5	14.93	10	40	
Cobalt	6.6	7.06	6	30	
Copper	16.6	18.28	10	30	
Iron	17400	18280	5	40	
Lead	8.9	9.10	3	40	
Manganese	306	335.9	9	40	
Nickel	12.7	14.02	10	30	
Potassium	1990	2604	27	40	
Selenium	1.5	0.84	NC	30	U
Silicon	221	212.9	4	40	
Silver	0.16	U	0.16	NC	30
Sodium	634	772.7	20	30	
Vanadium	39.8	38.71	3	30	
Zinc	64.6	77.99	19	40	

**Duplicate - Batch: 280-58310****Method: 6010B****Preparation: 3050B**

Lab Sample ID:	280-13665-1	Analysis Batch:	280-58881	Instrument ID:	MT_026
Client Matrix:	Solid	Prep Batch:	280-58310	Lab File ID:	26a032211.asc
Dilution:	1.0	Leach Batch:	N/A	Initial Weight/Volume:	1.16 g
Analysis Date:	03/22/2011 1641	Units:	mg/Kg	Final Weight/Volume:	100 mL
Prep Date:	03/21/2011 0800				
Leach Date:	N/A				

Analyte	Sample Result/Qual	Result	RPD	Limit	Qual
Magnesium	5950	6900	15	30	
Molybdenum	0.34	B	0.25	NC	30

## Quality Control Results

Client: Washington Closure Hanford

Job Number: 280-13665-1  
Sdg Number: JP0123**TCLP SPLPE Leachate Blank - Batch: 280-58636****Method: 6010B**  
**Preparation: 3010A**  
**TCLP**

Lab Sample ID:	LB 280-58346/1-B	Analysis Batch:	280-58856	Instrument ID:	MT_025
Client Matrix:	Solid	Prep Batch:	280-58636	Lab File ID:	25A7032211.asc
Dilution:	1.0	Leach Batch:	280-58346	Initial Weight/Volume:	10 mL
Analysis Date:	03/23/2011 0210	Units:	mg/L	Final Weight/Volume:	50 mL
Prep Date:	03/22/2011 1500				
Leach Date:	03/18/2011 1700				

Analyte	Result	Qual	MDL	RL
Arsenic	0.022	U	0.022	0.50
Barium	0.00855	B	0.0020	1.0
Cadmium	0.0020	U	0.0020	0.10
Chromium	0.0030	U	0.0030	0.50
Lead	0.013	U	0.013	0.50
Selenium	0.024	U	0.024	0.10
Silver	0.0040	U	0.0040	0.50

**Lab Control Sample - Batch: 280-58636****Method: 6010B**  
**Preparation: 3010A**  
**TCLP**

Lab Sample ID:	LCS 280-58346/2-B	Analysis Batch:	280-58856	Instrument ID:	MT_025
Client Matrix:	Solid	Prep Batch:	280-58636	Lab File ID:	25A7032211.asc
Dilution:	1.0	Leach Batch:	280-58346	Initial Weight/Volume:	10 mL
Analysis Date:	03/23/2011 0213	Units:	mg/L	Final Weight/Volume:	50 mL
Prep Date:	03/22/2011 1500				
Leach Date:	03/18/2011 1700				

Analyte	Spike Amount	Result	% Rec.	Limit	Qual
Arsenic	4.00	4.21	105	80 - 120	
Barium	12.0	12.58	105	80 - 120	
Cadmium	1.10	1.17	106	80 - 120	
Chromium	5.20	5.39	104	80 - 120	
Lead	5.50	5.67	103	80 - 120	
Selenium	3.00	3.25	108	80 - 120	
Silver	1.05	1.07	102	80 - 120	

## Quality Control Results

Client: Washington Closure Hanford

Job Number: 280-13665-1  
Sdg Number: JP0123**Matrix Spike - Batch: 280-58636****Method: 6010B**  
**Preparation: 3010A**  
**TCLP**

Lab Sample ID:	280-13665-4	Analysis Batch:	280-58856	Instrument ID:	MT_025
Client Matrix:	Solid	Prep Batch:	280-58636	Lab File ID:	25A7032211.asc
Dilution:	1.0	Leach Batch:	280-58346	Initial Weight/Volume:	10 mL
Analysis Date:	03/23/2011 0230	Units:	mg/L	Final Weight/Volume:	50 mL
Prep Date:	03/22/2011 1500				
Leach Date:	03/18/2011 1700				

Analyte	Sample Result/Qual	Spike Amount	Result	% Rec.	Limit	Qual
Arsenic	0.022	U	4.00	3.97	99	80 - 120
Barium	0.40	B	12.0	12.37	100	80 - 120
Cadmium	0.0020	U	1.10	1.10	100	80 - 120
Chromium	0.0030	U	5.20	5.10	98	80 - 120
Lead	0.013	U	5.50	5.36	97	80 - 120
Selenium	0.024	U	3.00	3.04	101	80 - 120
Silver	0.0040	U	1.05	1.03	98	80 - 120

**Duplicate - Batch: 280-58636****Method: 6010B**  
**Preparation: 3010A**  
**TCLP**

Lab Sample ID:	280-13665-4	Analysis Batch:	280-58856	Instrument ID:	MT_025
Client Matrix:	Solid	Prep Batch:	280-58636	Lab File ID:	25A7032211.asc
Dilution:	1.0	Leach Batch:	280-58346	Initial Weight/Volume:	10 mL
Analysis Date:	03/23/2011 0227	Units:	mg/L	Final Weight/Volume:	50 mL
Prep Date:	03/22/2011 1500				
Leach Date:	03/18/2011 1700				

Analyte	Sample Result/Qual	Result	RPD	Limit	Qual	
Arsenic	0.022	U	0.022	NC	20	U
Barium	0.40	B	0.387	4	20	B
Cadmium	0.0020	U	0.0020	NC	20	U
Chromium	0.0030	U	0.0030	NC	20	U
Lead	0.013	U	0.013	NC	20	U
Selenium	0.024	U	0.024	NC	20	U
Silver	0.0040	U	0.0040	NC	20	U

## Quality Control Results

Client: Washington Closure Hanford

Job Number: 280-13665-1  
Sdg Number: JP0123**TCLP SPLPE Leachate Blank - Batch: 280-58743****Method: 7470A****Preparation: 7470A****TCLP**

Lab Sample ID:	LB 280-58346/1-C	Analysis Batch:	280-59101	Instrument ID:	MT_033
Client Matrix:	Solid	Prep Batch:	280-58743	Lab File ID:	110323AD.TXT
Dilution:	1.0	Leach Batch:	280-58346	Initial Weight/Volume:	10 mL
Analysis Date:	03/23/2011 2106	Units:	mg/L	Final Weight/Volume:	10 mL
Prep Date:	03/23/2011 1300				
Leach Date:	03/18/2011 1700				

Analyte	Result	Qual	MDL	RL
Mercury	0.000030	U	0.000030	0.0020

**Lab Control Sample - Batch: 280-58743****Method: 7470A****Preparation: 7470A****TCLP**

Lab Sample ID:	LCS 280-58346/2-C	Analysis Batch:	280-59101	Instrument ID:	MT_033
Client Matrix:	Solid	Prep Batch:	280-58743	Lab File ID:	110323AD.TXT
Dilution:	1.0	Leach Batch:	280-58346	Initial Weight/Volume:	10 mL
Analysis Date:	03/23/2011 2108	Units:	mg/L	Final Weight/Volume:	10 mL
Prep Date:	03/23/2011 1300				
Leach Date:	03/18/2011 1700				

Analyte	Spike Amount	Result	% Rec.	Limit	Qual
Mercury	0.00500	0.00587	117	90 - 116	N

**Matrix Spike - Batch: 280-58743****Method: 7470A****Preparation: 7470A****TCLP**

Lab Sample ID:	280-13665-3	Analysis Batch:	280-59101	Instrument ID:	MT_033
Client Matrix:	Solid	Prep Batch:	280-58743	Lab File ID:	110323AD.TXT
Dilution:	1.0	Leach Batch:	280-58346	Initial Weight/Volume:	10 mL
Analysis Date:	03/23/2011 2118	Units:	mg/L	Final Weight/Volume:	10 mL
Prep Date:	03/23/2011 1300				
Leach Date:	03/18/2011 1700				

Analyte	Sample Result/Qual	Spike Amount	Result	% Rec.	Limit	Qual
Mercury	0.000030 U	0.00500	0.00574	115	90 - 116	

## Quality Control Results

Client: Washington Closure Hanford

Job Number: 280-13665-1

Sdg Number: JP0123

Duplicate - Batch: 280-58743

Method: 7470A

Preparation: 7470A

TCLP

Lab Sample ID:	280-13665-3	Analysis Batch:	280-59101	Instrument ID:	MT_033
Client Matrix:	Solid	Prep Batch:	280-58743	Lab File ID:	110323AD.TXT
Dilution:	1.0	Leach Batch:	280-58346	Initial Weight/Volume:	10 mL
Analysis Date:	03/23/2011 2125	Units:	mg/L	Final Weight/Volume:	10 mL
Prep Date:	03/23/2011 1300				
Leach Date:	03/18/2011 1700				

Analyte	Sample Result/Qual	Result	RPD	Limit	Qual
Mercury	0.000030 U	0.000030	NC	20	U N

## Quality Control Results

Client: Washington Closure Hanford

Job Number: 280-13665-1  
Sdg Number: JP0123**Method Blank - Batch: 280-58355****Method: 7471A****Preparation: 7471A**

Lab Sample ID:	MB 280-58355/1-A	Analysis Batch:	280-58997	Instrument ID:	MT_033
Client Matrix:	Solid	Prep Batch:	280-58355	Lab File ID:	110322AD.txt
Dilution:	1.0	Leach Batch:	N/A	Initial Weight/Volume:	0.60 g
Analysis Date:	03/22/2011 1739	Units:	mg/Kg	Final Weight/Volume:	50 mL
Prep Date:	03/22/2011 1255				
Leach Date:	N/A				

Analyte	Result	Qual	MDL	RL
Mercury	0.0055	U	0.0055	0.017

**Lab Control Sample - Batch: 280-58355****Method: 7471A****Preparation: 7471A**

Lab Sample ID:	LCS 280-58355/2-A	Analysis Batch:	280-58997	Instrument ID:	MT_033
Client Matrix:	Solid	Prep Batch:	280-58355	Lab File ID:	110322AD.txt
Dilution:	1.0	Leach Batch:	N/A	Initial Weight/Volume:	0.60 g
Analysis Date:	03/22/2011 1741	Units:	mg/Kg	Final Weight/Volume:	50 mL
Prep Date:	03/22/2011 1255				
Leach Date:	N/A				

Analyte	Spike Amount	Result	% Rec.	Limit	Qual
Mercury	0.417	0.440	105	87 - 111	

**Matrix Spike - Batch: 280-58355****Method: 7471A****Preparation: 7471A**

Lab Sample ID:	280-13665-3	Analysis Batch:	280-58997	Instrument ID:	MT_033
Client Matrix:	Solid	Prep Batch:	280-58355	Lab File ID:	110322AD.txt
Dilution:	1.0	Leach Batch:	N/A	Initial Weight/Volume:	0.63 g
Analysis Date:	03/22/2011 1757	Units:	mg/Kg	Final Weight/Volume:	50 mL
Prep Date:	03/22/2011 1255				
Leach Date:	N/A				

Analyte	Sample Result/Qual	Spike Amount	Result	% Rec.	Limit	Qual
Mercury	0.0053 U	0.414	0.471	114	87 - 111	N

## Quality Control Results

Client: Washington Closure Hanford

Job Number: 280-13665-1

Sdg Number: JP0123

**Duplicate - Batch: 280-58355**

**Method: 7471A**

**Preparation: 7471A**

Lab Sample ID:	280-13665-3	Analysis Batch:	280-58997	Instrument ID:	MT_033
Client Matrix:	Solid	Prep Batch:	280-58355	Lab File ID:	110322AD.txt
Dilution:	1.0	Leach Batch:	N/A	Initial Weight/Volume:	0.64 g
Analysis Date:	03/22/2011 1755	Units:	mg/Kg	Final Weight/Volume:	50 mL
Prep Date:	03/22/2011 1255				
Leach Date:	N/A				

Analyte	Sample Result/Qual	Result	RPD	Limit	Qual
Mercury	0.0053 U	0.0054	NC	20	U

## Quality Control Results

Client: Washington Closure Hanford

Job Number: 280-13665-1

Sdg Number: JP0123

**Duplicate - Batch: 280-58328**

**Method: D-2216**

**Preparation: N/A**

Lab Sample ID:	280-13665-1	Analysis Batch:	280-58328	Instrument ID:	No Equipment
Client Matrix:	Solid	Prep Batch:	N/A	Lab File ID:	N/A
Dilution:	1.0	Leach Batch:	N/A	Initial Weight/Volume:	
Analysis Date:	03/18/2011 1504	Units:	%	Final Weight/Volume:	
Prep Date:	N/A				
Leach Date:	N/A				

Analyte	Sample Result/Qual	Result	RPD	Limit	Qual
Percent Moisture	11.3	12.3	8	20	



Project 28002142 <sup>Col 10 TE</sup>  
S.1.1

Analytical Due:

Report Due: 3/25/11 (Rush \$30 TAT)

## Sample Check-in List

Date/Time Received: 3/8/11 0930 GM Screen Result 15 microR/hr

Client: Washington Closure Hanford SDG #: JP0123 NA [ ] SAF #: RC-182 NA [ ]

Job Number: 13665 Chain of Custody # RC-182-062  
AFS-04-120 E RC-03-002 79688392 9370 79688392 9420

Shipping Container ID: GWS-132 GWS-130 Air Bill # 7968 8392 9225 79688392 9523

1. Custody Seals on shipping container intact? NA [ ] Yes  No [ ]
2. Custody Seals dated and signed? NA [ ] Yes  No [ ]
3. Chain of Custody record present? NA [ ] Yes  No [ ]
4. Cooler Temperature °C: 2.4, 2.7, 3.4, 4.7 NA [ ] 5. Vermiculite/packing materials is NA [ ] Wet  Dry [ ]
6. Number of samples in shipping container: 4
7. Sample holding times exceeded? NA [ ] Yes [ ] No
8. Samples have:
  - Tape
  - Custody Seals
 Hazard Lables  
 Appropriate Sample Lables
9. Samples are:
  - In Good Condition
  - Broken
 Leaking  
 Have Air Bubbles  
 (Only for samples requiring no head space.)
10. Sample pH taken? NA  pH<2 [ ] pH>2 [ ] pH>9 [ ] Amount HNO<sub>3</sub> Added \_\_\_\_\_
11. Sample Location, Sample Collector Listed? \*  
 \*For documentation only. No corrective action needed.
12. Were any anomalies identified in sample receipt? Yes [ ] No
13. Description of anomalies (include sample numbers): \_\_\_\_\_

Sample Custodian: RJS Date: 3/8/11

Client Sample ID	Analysis Requested	Condition	Comments/Action

Client Informed on \_\_\_\_\_ by \_\_\_\_\_ Person Contacted \_\_\_\_\_

[ ] No action necessary; process as is.

Project Manager AKH Date 3/21/11

From: (509) 375-4640  
WCH MAILROOM  
WASHINGTON CLOSURE HANFORD  
2620 FERMI AVE

Origin ID: PSCA



RICHLAND, WA 99354

Ship Date: 17MAR11  
ActWgt: 80.0 LB  
CAD: 8897843/NET3130

Delivery Address Bar Code

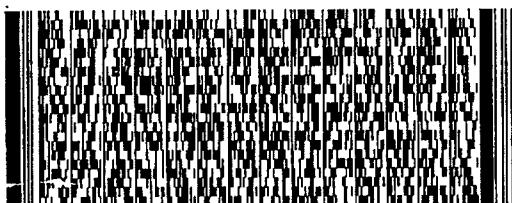


SHIP TO: (303) 736-0100

BILL SENDER

Sample Recieving  
Test America Denver  
4955 YARROW ST

ARVADA, CO 80002



Ref #

Invoice #

PO #

Dept #

1 of 4

FRI - 18 MAR A1

PRIORITY OVERNIGHT

TRK# 7968 8392 9225  
0201

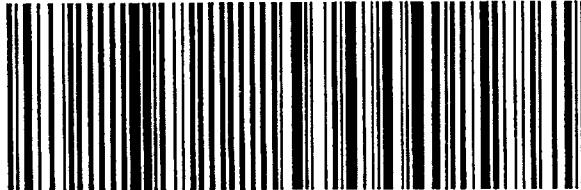
## MASTER ##

80002

CO-US

DEN

XH WHHA



500G2/BDD97/EFB

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 RICHLAND, WA 99354



J11101012220225

Ship Date: 17MAR11  
 ActWgt 48.0 LB  
 CAD: 8897843/INET3130

## Delivery Address Bar Code

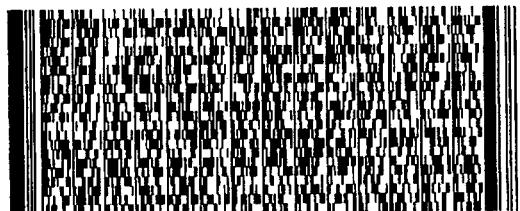


Ref #  
 Invoice #  
 PO #  
 Dept #

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**Sample Recieving**  
**Test America Denver**  
**4955 YARROW ST.**

BILL SENDER

ARVADA, CO 80002



MPS# 7968 8392 9270

0263

Mstr# 7968 8392 9225

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 2620 FERMI AVE  
 RICHLAND, WA 99354



Ship Date: 17MAR11  
 ActWgt 65.0 LB  
 CAD: 8897843/NET3130

Delivery Address Bar Code

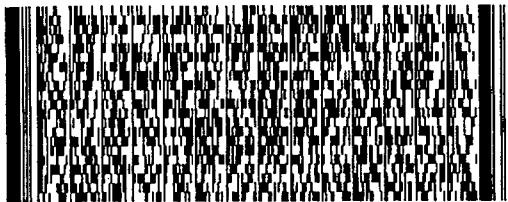


J11010101220225  
 Ref #  
 Invoice #  
 PO #  
 Dept #

SHIP TO: (303) 736-0100 BILL SENDER

Sample Recieving  
 Test America Denver  
 4955 YARROW ST

ARVADA, CO 80002



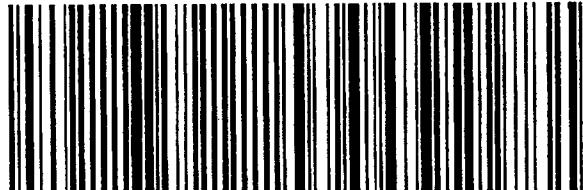
3 of 4  
 MPS# 7968 8392 9420  
 0263

Mstr# 7968 8392 9225

FRI - 18 MAR A1  
 PRIORITY OVERNIGHT

80002  
 CO-US  
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 WASHINGTON CLOSURE HANFORD  
 2620 FERMI AVE  
 RICHLAND, WA 99354



J11101012220225

Ship Date: 17MAR11  
 ActWgt: 71.0 LB  
 CAD: 8897843/INET3130

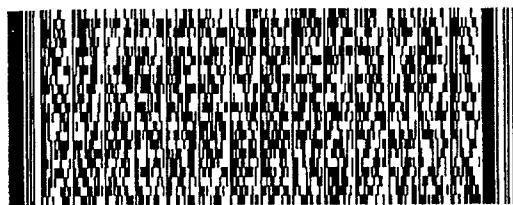
Delivery Address Bar Code



Ref #  
 Invoice #  
 PO #  
 Dept #

SHIP TO: (303) 736-0100 BILL SENDER

**Sample Recieving**  
**Test America Denver**  
**4955 YARROW ST**

**ARVADA, CO 80002**

4 of 4

**FRI - 18 MAR A1**  
**PRIORITY OVERNIGHT**

MPS# 7968 8392 9523

0263

Mstr# 7968 8392 9225

0201

**80002**

CO-US

**DEN****XH WHHA**

50DG28DD9/EFB

**After printing this label:**

1. Use the 'Print' button on this page to print your label to your laser or inkjet printer.
2. Fold the printed page along the horizontal line.
3. Place label in shipping pouch and affix it to your shipment so that the barcode portion of the label can be read and scanned.

**Warning:** Use only the printed original label for shipping. Using a photocopy of this label for shipping purposes is fraudulent and could result in additional billing charges, along with the cancellation of your FedEx account number.

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